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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/827,112      | 04/05/2001  | Sung Dae Cho         | AB-698-1D US        | 4932             |

7590 01/17/2002

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EXAMINER

ALCALA, JOSE H

ART UNIT PAPER NUMBER

2827

DATE MAILED: 01/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

|               |                 |               |
|---------------|-----------------|---------------|
|               | Application No. | Applicant(s)  |
|               | 09/827,112      | CHO, SUNG DAE |
| Examiner      | Art Unit        |               |
| Jose H Alcala | 2841            |               |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 22 October 2001.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-9 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 4/5/01 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. 09/219,407.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____                                     |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Upon further review of the claims as amended in paper no. 5, the Election of Species requirement has been vacated.

### ***Priority***

2. This application filed under former 37 CFR 1.60 lacks the necessary reference to the prior application. A statement reading: "This is a divisional of Application No. 09/219,407, filed on 12/23/98." should be entered following the title of the invention or as the first sentence of the specification. Also, the current status of all nonprovisional parent applications referenced should be included.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Haghiri-Tehrani (US Patent No.5,362,955).

Regarding Claim 1, Applicant's Admitted Prior Art teaches a reel-deployable printed circuit board (See Figure 6) comprising: an elongated, flexible base board having opposite edges (reference number 40), but fails to explicitly teach: a slit formed into it, the slit having an inner periphery defining a unit board within the flexible base board; and at least a connection bar connecting the unit board to the base board such that the unit board is pivotable on the connection bar relative to the base board.

Haghiri-Tehrani teaches an elongated, flexible base board (Reference number 11) having a slit formed into it (See Figure 5), the slit having an inner periphery defining a unit board within the flexible base board (See Figure 5); and at least a connection bar (Reference number 30) connecting the unit board to the base board such that the unit board is pivotable on the connection bar relative to the base board (See Figure 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Applicant's Admitted Prior Art and Haghiri-Tehrani in order to have a flexible base board having a slit formed into it, the slit having an inner periphery defining a unit board within the flexible base board; and at least a connection bar connecting the unit board to the base board such that the unit board is pivotable on the connection bar relative to the base board. Thus creating a specific, small and easily detachable path for separating the unit board from the flexible base, preventing errors caused in the process of having to punch through the whole periphery of the unit board.

Regarding Claim 2, Applicant's Admitted Prior Art teaches a bonding pad (Reference number 31) on a top surface of the unit board; a contact (Reference number 33) on a bottom surface of the unit board; and a via hole (Reference number 32) through the unit board electrically connecting the bonding pad to the contact. See Figure 2.

Regarding Claim 3, Applicant's Admitted Prior Art fails to explicitly teach that the contact comprises a layer of copper plated with gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the contact comprising a layer of copper plated with gold, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, and based on the excellent conducting properties of copper and gold. See *In re Leshin*, 125 USPQ 416.

Regarding Claim 4, Applicant's Admitted Prior Art teaches a dam (Reference number 35) inside the inner periphery of the slit.

Regarding Claim 5, Applicant's Admitted Prior Art fails to explicitly teach the base board is made of a glass-epoxy material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the base board of a glass-epoxy material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, and based on the excellent flexibility properties of a glass-epoxy material. See *In re Leshin*, 125 USPQ 416.

Regarding Claim 6, Applicant's Admitted Prior Art teaches that the base board includes a sprocket hole (Reference number 41) along at least one of the edges thereof.

Regarding Claim 7, Applicant's Admitted Prior Art teaches that the base board includes a position hole (Reference number 42) along one of the edges thereof.

Regarding Claim 8, Applicant's Admitted Prior Art teaches a semiconductor chip (Reference number 21) attached to an upper surface of the unit board, the chip having a connection pad (It is inherent that there is a pad used to connect the bonding wire to the chip) on an upper surface thereof; and a conductive wire (Reference number 23) having opposite ends, each bonded to a respective one of the bonding pad on the unit board and the connection pad on the chip.

Regarding Claim 9, Applicant's Admitted Prior Art teaches an encapsulant (Reference number 24) formed on the top surface of the unit board and encapsulating a region including the chip, the conductive wire, the bonding pad, and the connection pad.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose some of the elements of the instant claimed invention: Trüggelmann et al. (US Patent No. 5,936,227), Kodai et al. (US Patent No. 5,173,840), Houdeau et al. (US Patent No. 6,288,904), Shin et al. (US Patent No. 6,028,774), Venambre (US Patent No. 5,438,750) and Templeton, Jr. et al. (US Patent No. 5,519,201).

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

7. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

JHA

January 12, 2002



Klunes

Primary Examiner